

Risk Assessment for Determining Service Frequency

Directions

Determining Service Frequency: The frequency is determined by selecting the amount of points (1 to 4) for each category, totaling the points and selecting a frequency based on the total points.

Definitions

Occupancy: The number of people occupying a residence full-time. The Service Provider must determine if a residence is occupied full-time or not. Systems serving part-time or intermittently used residences must utilize technologies suitable for this condition of use.

Usage % of Design Flow: The percentage of actual hydraulic flow versus design and permitted hydraulic flow. Usage can be determined by water meter readings or by calculating usage from control panel elapsed time meter and cycle counter readings.

Property Size: The number of acres of the property containing the residence and system.

Site Limitations:

Soil H₂O Movement: The long-term acceptance rate of the soil based on a soil evaluation. Soils with low permeability present a greater risk for surfacing or “break-out”. Soils with high permeability present a greater risk for environmental degradation.

Limiting Layer: Restrictive layers closer to the surface present a higher risk for surfacing or “break-out” and for environmental degradation.

Nutrient Sensitivity: A measure of site's level of required nutrient reduction. For example, if site requires a system to discharge less than 10 mg/l TN, then this equates to an 80% plus reduction in TN.

Climate:

Temperature: Risk is based on annual minimum temperature map. Hot climates present a higher risk than a warm climate since extreme heat is detrimental to equipment exposed to sunlight and heat. Cold and severe cold climates present a greater risk since microbial activity is suppressed at colder temperatures. Severe cold climates can be detrimental to exposed equipment.

Precipitation: Risk is based on annual precipitation map. Higher precipitation presents higher risk of infiltration and dispersal field saturation.

Process Reliability: The risk assessment is based on the process robustness, fail-safeness and dosing/resting regime. In simplistic terms, how easy is it to upset the process and/or have carry-over of deleterious materials? Assign points from only one process in this category. Example: A timed dose single pass media filter incorporates a septic tank, however, only assign the point(s) under “Single Pass Media Filter: Timed Dosing”, which in this case is 1 point.

Dispersal Method: Risk based on field location relative to the ground surface. Another risk factor is the uniformity of effluent distribution and dosing/resting regime.

Disinfection: Disinfection processes are maintenance intensive. First, they require frequent attention to ensure the equipment is functioning properly. Second, they require frequent attention to ensure that disinfection of effluent is taking place.

Example

Parameters: A home in Bangor, Maine is situated on $\frac{3}{4}$ acre lot. The home has 5 people using 350gpd out of a permitted 600gpd. The home has a conventional system with no limiting conditions.

Answer: 5 occupants=2 points; flow usage is 58% of design flow=2 points; $\frac{3}{4}$ acre lot=3 points; soil movement is good=1 point; no limiting layer=1 point; no nutrient sensitivity=1 point; temperature cold=3 points; precipitation=3 points; septic tank=4 points; gravity in-ground dispersal=2 points. TOTAL=22 POINTS
SERVICE FREQUENCY=ONCE YEAR

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DIRECTIONS: Assign points from each category. Total points and select service frequency from table below.

RISK FACTORS		POINT SCALE*			
		1	2	3	4
OCCUPANCY		1–3	4–5	6–7	8+
USAGE % of DESIGN FLOW		50%	50–70%	70–90%	90%+
PROPERTY SIZE		5–10 acres	1–5 acres	½–1 acre	<½ acre
SITE LIMITATIONS					
	Soil H ₂ O Movement	Good	Moderate	Rapid or Restricted	No movement
	Limiting Layer (H ₂ O table, rock)	6ft+ below surface	3ft–6ft below surface	1ft–3ft below surface	Within 1ft of surface
	Nutrient Sensitivity	None	TN or TP reduction 25–50%	TN or TP reduction 50–80%	TN or TP reduction 80%+
CLIMATE					
	Temperature	Warm	Hot	Cold	Severe cold
	Precipitation	1–25in	25–40in	40–60in	60in+
PROCESS RELIABILITY	<i>CHOOSE ONLY ONE FROM LIST BELOW</i>				
	Septic Tank				X
	Septic Tank & Effluent Screen			X	
	Aeration Unit				X
	Trash Tank & Aeration Unit			X	
	Trash Tank & Aeration Unit w/ either				
	–Polishing Filter (after unit) or		X		
	–Timed Dosing (preceding unit)		X		
	Single Pass Media Filter				
	–Gravity, Siphon or Demand Dosing		X		
	–Timed Dosing	X			
	Multiple Pass Media Filter				
	–Timed Dosing		X		
	–Timed Dosing & Auto Recirc Rate Adj	X			
DISPERSAL METHOD	<i>CHOOSE ONLY ONE FROM LIST BELOW</i>				
	Gravity		In-ground	At-grade	
	Demand Dose Uniform Distribution		In-ground	At-grade	Mound
	Timed Dose Uniform Distribution**	In-ground	At-grade	Mound	Direct discharge
DISINFECTION***	<i>IF APPLICABLE</i>			Biofiltration	Chlorination or UV

*1=LOW; 2=MODERATE; 3=HIGH; 4=VERY HIGH

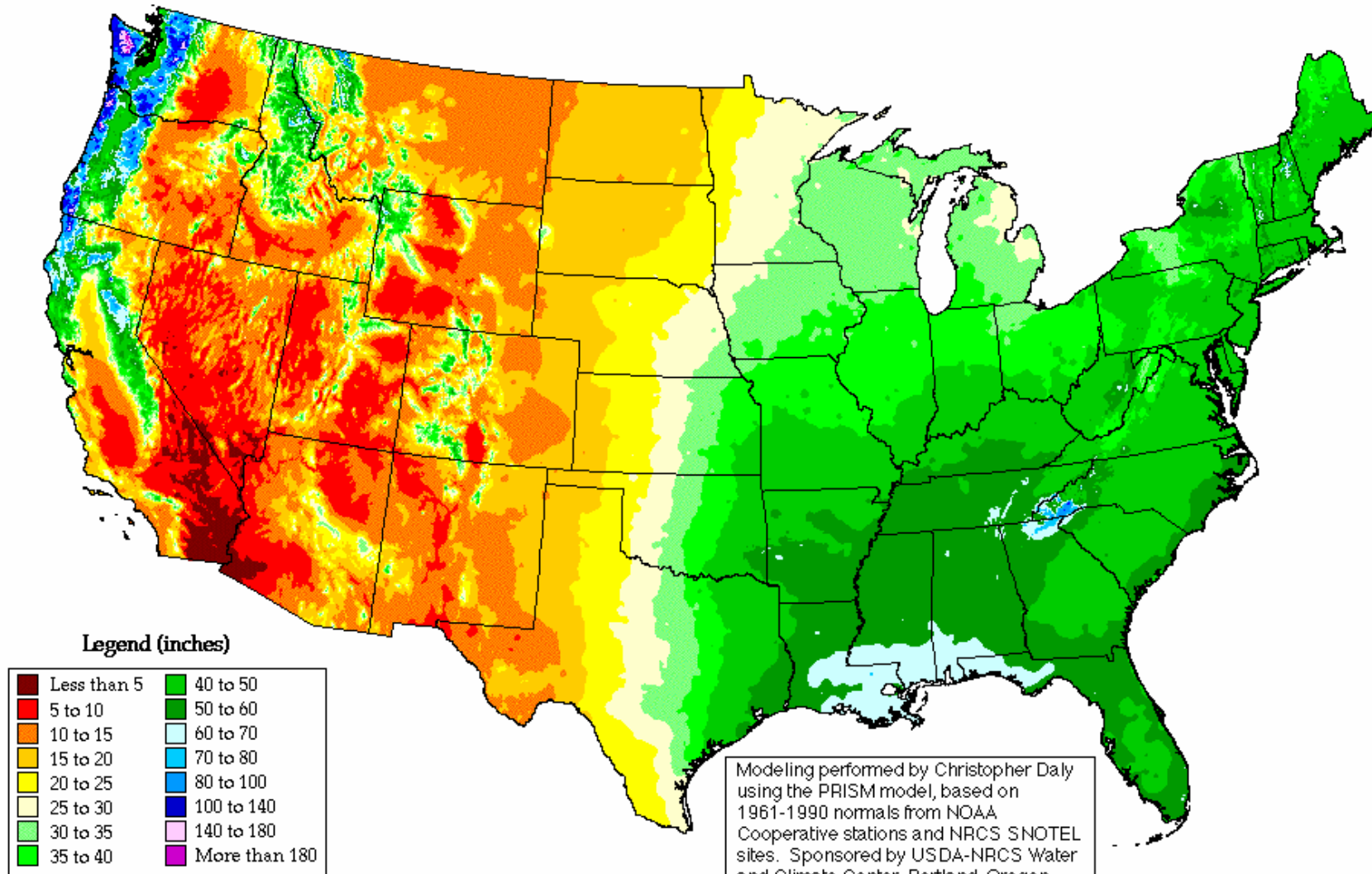
**EITHER PRECEDING TREATMENT UNIT OR DISPERSAL FIELD

***SOME DISINFECTION UNITS NEED SERVICE EVERY 2–6 WEEKS

POINTS	FREQUENCY
13 or less	3 – 5 years
14 – 17	1 – 3 years
18 – 22	Once year
23 – 27	Twice year
28 – 32	Quarterly
33+	2 months or less

Annual Average Precipitation

United States of America

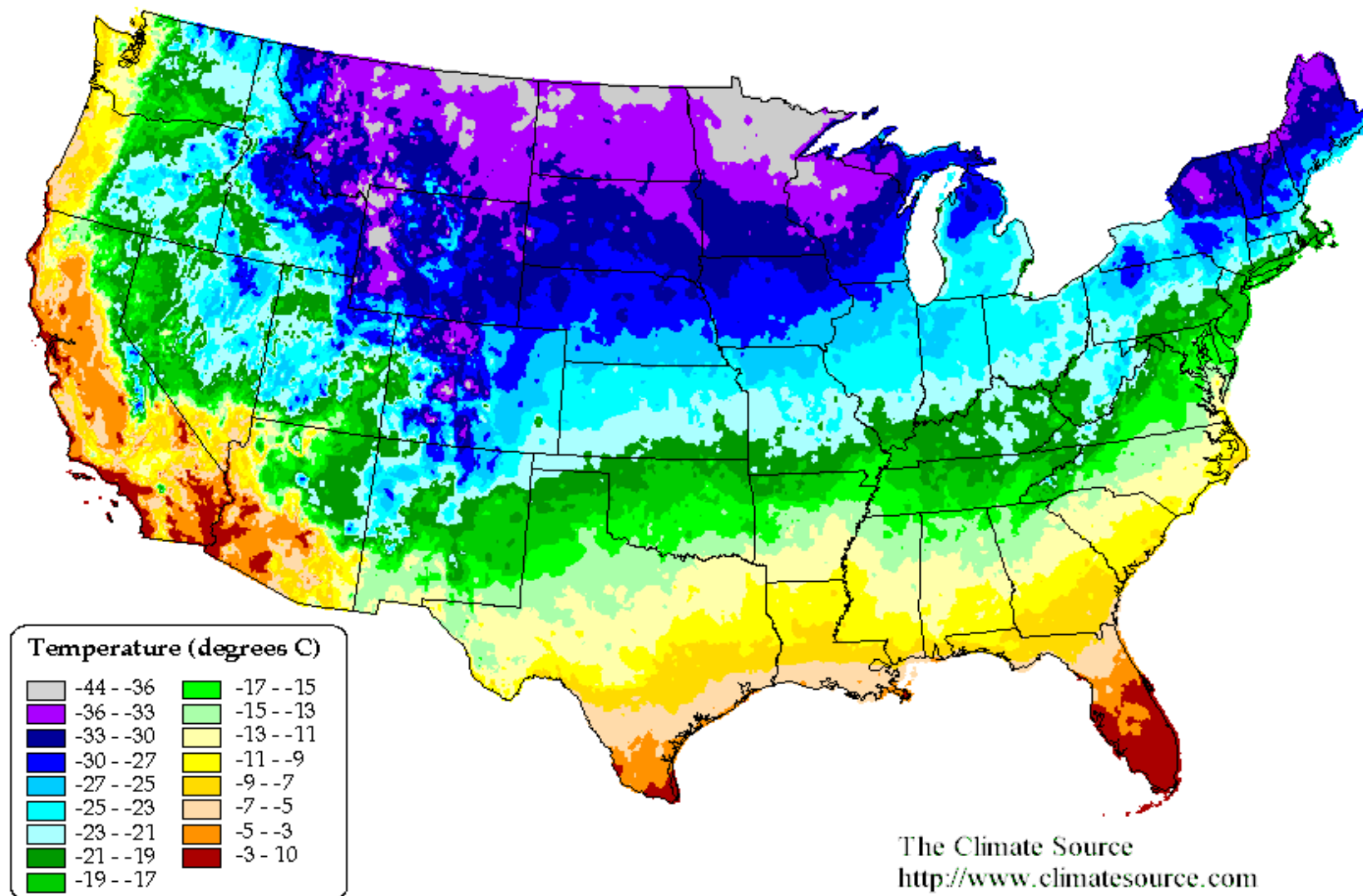


Period: 1961-1990

Modeling performed by Christopher Daly using the PRISM model, based on 1961-1990 normals from NOAA Cooperative stations and NRCS SNOTEL sites. Sponsored by USDA-NRCS Water and Climate Center, Portland, Oregon.

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1961-1990 PRISM Mean Annual Extreme Minimum Temperature, United States



Map Created: February, 2001

200 0 200 400 Kilometers

The Climate Source
<http://www.climatesource.com>

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